



Atal Bihari Vajpayee
Indian Institute of Information Technology
and Management (ABV-IIITM), Gwalior
(An Institute of National Importance, Ministry of Education, Government of India)

Topic : Extracting Actionable Insights from Users Feedback

Under the guidance of

Supervisor : Dr. Santosh Singh Rathore

Submitted By :

Name : Bhavana Mekala

Rollno : 2021BCS-041

Introduction

In today's competitive market, businesses must continuously adapt and improve their products and services based on customer feedback. User feedback provides valuable insights into customer satisfaction, preferences, and areas needing improvement. However, manually sifting through vast amounts of feedback data can be time-consuming and inefficient. Therefore, automating the process of extracting actionable insights from user feedback is crucial for timely and effective decision-making.

What are actionable insights?

In its most basic form, actionable insights are meaningful findings that result from raw data in your analytics tool.

Problem Statement

The primary issue addressed in this project is the difficulty in efficiently analyzing large volumes of user feedback to extract actionable insights. Traditional methods of feedback analysis are often manual, leading to delayed responses to customer needs and missed opportunities for improvement. This project aims to develop an automated system that leverages natural language processing (NLP) and machine learning techniques to analyze user feedback and generate actionable insights.

Brief Literature Review

Extracting actionable insights from user feedback involves several steps, including data collection, data cleaning, analysis, and reporting.

1. Data Collection

Collect user feedback from places like surveys, customer reviews, social media posts, and emails.

2. Data Cleaning

Text Preprocessing :

2.1 Remove Noise: Get rid of unnecessary parts of the text like HTML tags, punctuation marks, and common words that don't add much meaning (called stopwords). Removal of HTML tags can be done with 're' library.

2.2 Lowercasing: Convert all text to lowercase so that words like "Good" and "good" are treated the same. Lowercasing with text can be done with simple python string methods

2.3 Stemming and Lemmatization: Reduce words to their base or root form. For example, "running" becomes "run.". This can be done using library nltk or spacy.

3. Data Analysis:

3.1 Sentiment Analysis:

Figure out if the feedback is positive, negative, or neutral. This helps you understand the overall mood of the feedback. Perform sentiment analysis using ``TextBlob`` or ``VADER``.

3.2 Topic Modeling:

Find common themes or topics in the feedback. For instance, many comments might talk about "customer service" or "product quality." Apply topic modeling with ``gensim``.

3.3 Keyword Extraction:

Pull out important words or phrases that show what users are concerned about or suggesting. Extract keywords using ``nltk`` or ``spacy``.

4. Actionable Insights

4.1 Identify Patterns:

Look for recurring themes or issues in the feedback. For example, if many users mention "slow delivery," that's a pattern.

4.2 Prioritize Issues:

Based on how often issues are mentioned and the sentiment behind them, decide which ones need to be addressed first.

4.3 Visualization:

Use charts, graphs, or word clouds to visually present the insights. This makes it easier to understand and communicate the findings.

By following these steps, we can effectively analyze user feedback and draw meaningful insights that can help improve your product or service.

Opinions Sandbox

The Opinions Sandbox integrates sentiment and topic extraction to offer actionable recommendations for businesses. It analyzes customer feedback to extract sentiments and identify key topics. This tool processes comments, identifies main topics, evaluates sentiments, and simulates the impact of addressing customer issues. This helps businesses prioritize actions based on potential improvements in customer sentiment and associated costs. Various models like Topic Sentiment Mixture (TSM), Joint Sentiment/Topic (JST), and Double Latent Dirichlet Allocation (DLDA) have been used for topic extraction and sentiment analysis. However, previous work has focused mainly on analysis without translating insights into business strategies.

The Opinions Sandbox Framework

- It collects reviews related to a specific product, service, or business and preprocesses the data.
- It uses Latent Dirichlet Allocation (LDA) to partition the reviews into topics, each representing an aspect of the service or product.

- It performs sentiment analysis within each topic using a "bag-of-words" approach, counting the frequency of positive and negative words.
- It simulates the effect of addressing negative reviews by injecting positive comments and predicting the resulting sentiment.

Finally, it provides businesses with recommendations on which issues to address, balancing the cost and potential improvement in sentiment.